



**SNS College of Technology, Coimbatore-35.**

(An Autonomous Institution)

Internal Assessment -I

Academic Year 2024 -2025 (Odd)

Fifth Semester

19MAT301-Discrete Mathematics

(REGULATION 2019)

Common to CSE, IT & AIML

A

Reg.No:

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Time: 1.30 Hours

Maximum Marks: 50

**PART - A (5 x 2 = 10 MARKS)**  
**ANSWER ALL QUESTIONS**

1.	Construct the truth table for $(P \wedge Q)$ and $(Q \vee P)$ .	CO1	(Und)
2.	Give the Contra positive for the statement "If it rains then the crops will grow".	CO1	(Und)
3.	Write the Quantifiers for "Every apple is red".	CO1	(Und)
4.	List out the application of pigeonhole principle.	CO2	(Rem)
5.	State the Principle of Mathematical induction.	CO2	(Rem)

**PART -B (13+13+14 = 40 MARKS)**  
**ANSWER ALL QUESTIONS**

6.	a) i) Show that $(P \wedge Q) \wedge \neg(P \vee Q)$ is a Contradiction.	CO1	(App) (7)
	ii) Show that $R \rightarrow S$ can be derived from the premises $P \rightarrow (Q \rightarrow S)$ , $\neg R \vee P$ and $Q$ .	CO1	(App) (6)
	(OR)		
	b) i) Without using truth table show that $\neg(P \wedge Q) \rightarrow (\neg P \vee (\neg P \vee Q)) \Leftrightarrow \neg P \vee Q$	CO1	(App) (7)
	ii) Obtain the PDNF of $P \rightarrow ((P \rightarrow Q) \wedge \neg(\neg Q \vee \neg P))$ and also find its PCNF.	CO1	(App) (6)
7.	a) i) Show that $R \rightarrow \neg Q, R \vee S, S \rightarrow \neg Q, P \rightarrow Q \Rightarrow \neg P$ by indirect method.	CO1	(App) (7)
	ii) Prove that the premises $P \rightarrow Q, Q \rightarrow R, S \rightarrow \neg R$ and $P \wedge S$ are inconsistent.	CO1	(App) (6)
	(OR)		

8.	b) i) Prove that $\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \dots + \frac{1}{n(n+1)} = \frac{n}{n+1}$	CO2	(App) (7)
	ii) Use Mathematical Induction to prove that $8^n - 3^n$ is a multiple of 5.	CO2	(App) (6)
	a) Show that the premises "one student in this class knows how to write programs in java", "Everyone who knows how to write program in java can get a high-paying job" imply the conclusion "Someone in this class can get a high-paying job".	CO1	(Ana) (14)
	(OR)		
	b) i) Prove by mathematical induction $\sum_{k=1}^n k^2 = \frac{n(n+1)(2n+1)}{6}$	CO2	(App) (10)
	ii) State pigeon hole principle and prove that 25 dictionaries in a library contain a total of 40,325 pages, then one of the dictionaries must have atleast 1614 pages, which satisfies the pigeon hole principle.	CO2	(Ana) (4)

Rem/Und: Remember/ Understand    App: Apply    Ana: Analyze    Eva: Evaluate

Cre: Create

Prepared by

Verified by

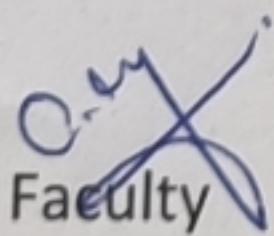
Dean(S&H)

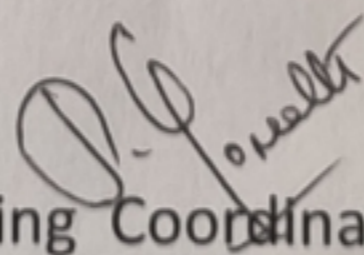
**Center for Learning and Teaching**

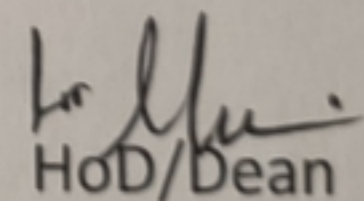
<b>Institution</b>	SNS COLLEGE OF TECHNOLOGY
<b>Branch</b>	Mathematics
<b>Academic Year</b>	2024 -2025 (Odd)
<b>Semester</b>	V
<b>Course Code/Name</b>	19MAT301 - Discrete Mathematics ( IAE 1 - SET A)
<b>Name of the Faculty</b>	Ms.C.Saranya

S.No	Quality Parameters based on blooms	Grade points (g)	Part	No.of Questions (n)	Allotted marks (m)	n*m	Q= n*m*g
1	Remember/ Understand (Level-1,2)	1	A	5	2	10	10
			B	-	-	-	-
			C	-	-	-	-
2	Apply (Level-3)	2	A	-	-	-	-
			B	4	6	24	48
				4	7	28	56
			C	1	10	10	20
3	Analyze (Level-4)	3	A	-	-	-	-
			B	1	4	4	12
				1	14	14	42
			C	-	-	-	-
4	Evaluate (Level-5)	4	A	-	-	-	-
			B	-	-	-	-
			C	-	-	-	-
5	Create (Level-6)	5	A	-	-	-	-
			B	-	-	-	-
			C	-	-	-	-

Quality Index  $Q_i = \frac{\sum Q}{\sum (n \times m)} = 188/90 = 2.09$  (Medium)

  
Faculty

  
Teaching Coordinator

  
HoD/Dean